serially exposing said adhesion layer to third and fourth reactive gases to form a barrier layer adjacent to said adhesion layer.

2. (Original) The method as recited in claim 1 further including depositing a layer of copper adjacent to said barrier layer.

3. (Original) The method as recited in claim 1 further including repeating serially exposing said substrate to first and second reactive gases to form said adhesion layer to a desired thickness before serially exposing said adhesion layer to third and fourth reactive gases.

4. (Original) The method as recited in claim 3 further including repeating serially exposing said substrate to third and fourth reactive gases to form said barrier layer to a desired thickness after serially exposing said substrate to first and second reactive gases.

5. (Original) The method as recited in claim 1 further including providing first and second processing chambers wherein serially exposing said substrate to first and second reactive gases further includes serially exposing said substrate to said first and second reactive gases while said substrate is disposed in said first processing chamber and serially exposing said adhesion layer to third and fourth reactive gases further includes serially exposing said adhesion layer to third and fourth reactive gases while said substrate is positioned in said second processing chamber.

6. (Original) The method as recited in claim 3 further including providing first and second processing chambers wherein serially exposing said substrate to first and second reactive gases further includes serially exposing said substrate to said first and second reactive gases while said substrate is disposed in said first processing chamber and serially exposing said adhesion layer to third and fourth reactive gases further includes serially exposing said adhesion layer to third and fourth reactive gases while said substrate is positioned in said first processing chamber and depositing a layer of copper adjacent to said barrier layer further includes depositing a copper layer adjacent

to said barrier layer when said substrate is positioned in said second processing chamber.

7. (Currently amended) The method as recited in claim 1 further including providing first, second and third processing chambers wherein serially exposing said substrate to first and second reactive gases further includes serially exposing said substrate to said first and second reactive gases while said substrate is disposed in said first processing chamber and serially exposing said adhesion layer to third and fourth reactive gases further includes serially exposing said adhesion layer to third and fourth reactive gases while said substrate is positioned in said ~~first~~ second processing chamber and depositing a layer of copper adjacent to said barrier layer further includes depositing a copper layer adjacent to said barrier layer when said substrate is positioned in said third processing chamber.

8. (Original) The method as recited in claim 1 wherein serially exposing said substrate further includes introducing said second reactive gas into said processing chamber and further including purging said processing chamber of said second reactive gas before exposing said adhesion layer to said third reactive gas.

9. (Original) The method as recited in claim 1 wherein said first and third gases each includes a refractory metal compound, with the refractory metal compound associated with said first reactive gas differing from the refractory metal compound associated with said third reactive gas.

10. (Previously presented) The method as recited in claim 1 wherein said first reactive gas is selected from the group consisting of TDMAT, TDEAT and $TiCl_4$ and said second reactive gas is selected from the group consisting of H_2, B_2H_6, SiH_4 and NH_3.

11. (Previously presented) The method as recited in claim 1 wherein said third reactive gas is WF_6 and said fourth reactive gas is selected from the group consisting of SiH_4, B_2H_6 and NH_3.

12. (Previously presented) The method as recited in claim 1 further comprising purging said processing chamber of said first reactive gas before introducing said second reactive gas by introducing a purge gas into said processing chamber after exposing said substrate to said first reactive gas and before exposing said substrate to said second reactive gas.

13. (Previously presented) The method as recited in claim 1 further comprising purging said processing chamber of said first reactive gas before introducing said second reactive gas by pumping said processing chamber clear of said first reactive gas before introducing said second reactive gas.

14. (Previously presented) The method as recited in claim 1 further comprising purging said processing chamber of said third reactive gas before introducing said fourth reactive gas by introducing a purge gas into said processing chamber after exposing said substrate to said third reactive gas and before exposing said substrate to said fourth reactive gas.

15. (Previously presented) The method as recited in claim 1 further comprising purging said processing chamber of said third reactive gas before introducing said fourth reactive gas by pumping said processing chamber clear of said third reactive gas before introducing said fourth reactive gas.

16. (Original) A method for forming a stacked barrier layer on a substrate disposed in a processing chamber, said method comprising:

serially exposing said substrate to first and second reactive gases to form an adhesion layer by introducing said first reactive gas into said processing chamber and removing said first reactive gas from said processing chamber before introducing said second reactive gas;

repeating serially exposing said substrate to first and second reactive gases to form said adhesion layer to a desired thickness;

serially exposing said adhesion layer to third and fourth reactive gases to form a barrier layer adjacent to said adhesion layer by introducing said third reactive gas into

said processing chamber and clearing said third reactive gas from said processing chamber before introducing said fourth reactive gas;

repeating serially exposing said substrate to third and fourth reactive gases to form said barrier layer to an acceptable thickness;

purging said processing chamber of said first and second reactive gases before introducing either of said third and fourth reactive gases; and

depositing a layer of copper adjacent to said barrier layer.

17. (Previously presented) The method as recited in claim 16 wherein said first reactive gas is selected from the group consisting of TDMAT, TDEAT and $TiCl_4$, said second reactive gas is selected from the group consisting of H_2, B_2H_6, SiH_4 and NH_3, said third reactive gas is WF_6, and said fourth reactive gas is selected from the group consisting of SiH_4, B_2H_6 and NH_3.

18. (Previously presented) The method as recited in claim 16 further comprising removing said first reactive gas from said processing chamber before introducing said second reactive gas by introducing an inert gas into said processing chamber, and clearing said third reactive gas from said processing chamber before introducing said fourth reactive gas by introducing an expulsion gas into said processing chamber.

19. (Previously presented) The method as recited in claim 16 further comprising removing said first reactive gas from said processing chamber before introducing said second reactive gas by pumping said processing chamber clear of said first reactive gas, and clearing said third reactive gas from said processing chamber by pumping said processing chamber clear of said third reactive gas.

Claims 20-25 (Cancelled).

26. (Previously Presented) A method for forming a stacked barrier layer on a substrate surface, comprising:

exposing the substrate surface to a first reactive gas;

exposing the substrate surface to a second reactive gas;

sequentially repeating the exposure to the first and second reactive gases until an adhesion layer having a desired thickness is formed;

exposing the substrate surface to a third reactive gas;

exposing the substrate surface to a fourth reactive gas; and then

sequentially repeating the exposure to the third and fourth reactive gases until a barrier layer having a desired thickness is formed over the adhesion layer.

27. (Original) The method of claim 26, wherein the first reactive gas comprises a refractory metal-containing compound.

28. (Original) The method of claim 27, wherein the refractory metal-containing compound comprises TDMAT, TDEAT, $TiCl_4$, or combinations thereof.

[[28]] 29. (Currently Amended) The method of claim 27, wherein the second precursor gas comprises a reducing compound.

[[29]] *30*. (Currently Amended) The method of claim [[28]] 29, wherein the reducing compound comprises H_2, B_2H_6, SiH_4, NH_3, or combinations thereof.

[[30]] 31. (Currently Amended) The method of claim 27, wherein the third precursor gas comprises a refractory metal-containing compound.

[[31]] 32. (Currently Amended) The method of claim [[30]] 31, wherein the refractory metal-containing compound comprises tungsten.

[[32]] 33. (Currently Amended) The method of claim 27, wherein the fourth comprises a reducing compound.

[[33]] 34. (Currently Amended) The method of claim [[32]] 33, wherein the reducing compound comprises SiH_4, B_2H_6, NH_3, or combinations thereof.

[[34]] 35. (Currently Amended) The method of claim 26, further comprising depositing copper at least partially over the barrier layer.

[[35]] 36. (Currently Amended) The method of claim 26, wherein the adhesion layer is deposited within a first processing chamber.

[[36]] 37. (Currently Amended) The method of claim [[35[[36, wherein the barrier layer is deposited within a second processing chamber.

[[37]] 38. (Currently Amended) The method of claim [[36]] 37, wherein the copper is deposited in a third processing chamber.

[[38]] 39. (Currently Amended) The method of claim [[37]] 38, wherein the first, second and third processing chambers are each disposed about a common mainframe.

[[39]] 40. (Currently Amended) The method of claim [[35]] 36, wherein the adhesion layer and the barrier layer are both deposited in the first chamber.

[[40]] 41. (Currently Amended) A method for depositing a barrier layer on a substrate surface, comprising:

sequentially exposing the substrate surface to a first refractory metal-containing compound and a first reducing compound; and

sequentially exposing the substrate surface to a second refractory metal-containing compound and a second reducing compound to form the barrier layer.

[[41]] 42. (Currently Amended) The method of claim [[40]] 41, wherein the first refractory metal-containing compound comprises TDMAT, TDEAT, $TiCl_4$, or combinations thereof.

[[42]] 43. (Currently Amended) The method of claim [[40]] 41, wherein the second refractory metal-containing compound comprises tungsten.

[[43]] 44. (Currently Amended) The method of claim [[40[[41, wherein the first and second reducing compounds is selected from a group consisting of SiH_4, B_2H_6, NH_3, and combinations thereof.

[[44]] 45. (Currently Amended) The method of claim [[40]] 41, wherein the barrier layer comprises titanium, titanium nitride, tungsten, tungsten nitride, or combinations thereof.

[[45]] 46. (Currently Amended) The method of claim [[40]] 41, wherein the adhesion layer is deposited within a first processing chamber and the barrier layer is deposited within a second processing chamber.

[[46]] 47. (Currently Amended) The method of claim [[40]] 41, further comprising depositing copper at least partially over the barrier layer.

[[47]] 48. (Currently Amended) The method of claim [[46]] 47, wherein the adhesion layer is deposited within a first processing chamber and the barrier layer is deposited within a second processing chamber.

[[48]] 49. (Currently Amended) The method of claim [[47]] 48, wherein the copper is deposited in a third processing chamber and the first, second and third processing chambers are each disposed about a common mainframe.

[[49]] 50. (Currently Amended) The method of claim [[47]] 48, wherein the adhesion layer and the barrier layer are both deposited in the first chamber.

[[50]] 51. (Currently Amended) A method for forming a metal contact on a substrate surface, comprising:

sequentially exposing the substrate surface to a titanium-containing compound and a nitrogen-containing compound to form an adhesion layer comprising titanium nitride;

sequentially exposing the substrate surface to a tungsten-containing compound and a reducing compound to form a barrier layer comprising tungsten; and

depositing copper at least partially over the barrier layer to form the metal contact.

[[51]] 52. (Currently Amended) The method of claim [[50]] 51, wherein the tungsten-containing compound comprises TDMAT, TDEAT, $TiCl_4$, or combinations thereof.

[[52]] 53. (Currently Amended) The method of claim [[50]] 51, wherein the reducing compound is selected from a group consisting of SiH_4, B_2H_6, NH_3, and combinations thereof.

[[53]] 54. (Currently Amended) The method of claim [[50]] 51, wherein the adhesion layer is deposited within a first processing chamber and the barrier layer is deposited within a second processing chamber.

[[54]] 55. (Currently Amended) The method of claim [[53]] 54, wherein the copper is deposited in a third processing chamber and the first, second and third processing chambers are each disposed about a common mainframe.